

plants by experimentally determining their ability to resist damage from stresses in the art, as compared to a control. " Applicants respectfully disagree with the Examiner's conclusions for the following reasons.

Dodds et al describe a method for the determination of cell viability in suspension cultures by measuring the cells' capacity to reduce 2,3,5-triphenyltetrazolium chloride to measure the electron flow in the mitochondrial electron transport chain. Dodds et al report a "close positive correlation between the amount of formazan (the reduced reaction product) produced and the percentage of viable cells in the sample."

As the Examiner will realize, the terminal mitochondrial electron transport is indeed (under physiological conditions) a fundamental process of living cells. Hence, a positive correlation between electron flow in the mitochondrial electron transport chain as determined by this test and the amount of viable cells in the cell suspension is not really surprising. Thus, Dodd et al teach a correlation between mitochondrial electron transport and the viable fraction of the cells in a cell suspension culture.

However, Dodd et al fail to teach or suggest that using this system to measure electron flow in the mitochondrial electron transport chain after applying stress to an explant results in an assessment of agronomical performance in plants.

Each of the secondary references of Strack et al, Muller et al, Bergland et al, Harding et al, Moldau Uotila et al, Chen et al or Masojidek et al. describe subjecting plants to a specific stress and analyzing at different levels the affected physiological and biochemical processes. None of these references analyze the effect of the particular imposed stress on mitochondrial electron flow. Only Harding et al and Masojidek et al describe analyzing photosynthetic electron transport. Indeed, prior to correlation between agronomical performance or fitness and mitochondrial electron flow described in the present invention, it was generally assumed in the art that the photosynthetic

of Dodds et al, modifying same by obvious parameter optimizations known in the art, to assess the agronomical fitness of plants by experimentally determining their ability to resist damage from stresses in the art, as compared to a control) to arrive at the presently claimed invention could be only through the use of hindsight.

It is well settled in the case law that hindsight reconstruction cannot be used to arrive at a conclusion of obvious. This is clearly stated in *Medtronic Inc. v. Daig Corp.*, 611 F. Supp 1498, 1534, 227 USPQ 5009, 535 (D. Minn., 1985) *aff'd* 789 F. 2d 903, 229 USPQ 664 (Fed. Cir. 1986) *cert denied*, 479 U.S. 931 (1986) where the court stated the following:

Hindsight.... Is quite improper when resolving the question of obviousness. To use the patent in suit as a guide through the morass of prior art references, combing the right references in the right way to arrive at the result of the claims in suit is...also quite improper."

Thus, in conclusion, Applicants submit that the combination of references, if they could be properly combined, would not lead the skilled artisan to believe that there would be any expectation of success of the presently claimed method. This could only be achieved through hindsight reproduction.

Thus, in view of the above, withdrawal of this rejection is respectfully requested.

In view of the foregoing reasonable action in the form of a Notice of Allowance is respectfully requested and earnestly solicited.

electron flow rather than the mitochondrial electron flow would reflect fitness of plants.

Thus, there is no motivation provided to combine the teaching of the primary reference with the secondary references; i.e., to measure mitochondrial electron flow in the cells of an explant or plant material after applying stress in order to assess agronomical performance of the plants.

More importantly, the secondary references of Strack et al, Muller et al, Bergland et al, Harding et al, Moldau, Uotila et al, Chen et al or Masojidek et al., like the primary reference of Dodd et al, are completely silent about a positive correlation between mitochondrial electron flow in stressed isolated explants and fitness or agronomical performance of complete plants, the latter normally being determined by field trials.

Assuming arguendo that the person skilled in the art would nevertheless have decided to measure mitochondrial electron flow after applying stress to an explant, (contrary to the general belief at the time of filing this application; i.e., that photosynthetic electron flow reflected fitness in plants) and thus would have modified the method of Dodd et al by applying a particular stress impulse to an explant of the plant, the combined teachings of the references would lead the skilled person to believe that the skilled person has determined the fraction of viable cells that survived the particular stress. There is however no guidance at all that this mitochondrial electron flow in explants under stress conditions somehow reflects the agronomical performance or fitness in whole plants. This correlation has been provided for the first time in the present application. Thus, there is no reasonable expectation of success provided by the method of Dodd et al modified by the application provided of the particular stress conditions as taught by the secondary references, that permit the determination of the agronomical fitness of plants.

The only way that the Examiner can in fact come to the conclusion reached in the Official Action (i.e., that a skilled artisan would use the method

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact MaryAnne Armstrong, Ph.D. (Reg. No. 40,069) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees..

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By *mp armstrong*
Gerald M. Murphy, Jr., #28,977

MaryAnne Armstrong, PhD., #40,069

GMM/MAA/csp
2121-0154P

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000

Attachment: Version with Markings to Show Changes Made

MARKED UP VERSION OF CLAIMS

RECEIVED

FEB 08 2002

TECH CENTER 1600/2900

24. (Once Amended) A method for assessing the agronomical fitness of a plant [or plant material] comprising the steps of:

- d.) subjecting an explant of said plant [or plant material] to a stress condition;
- e.) measuring the electron flow in the mitochondrial electron transport chain to assess agronomical fitness in cells of said explant of said plant [or said plant material];
- f.) comparing said measurement to that of explants of control plants [or control plant material], under similar conditions as for said explant[s] of said plant [or said plant material], wherein the greater the amount of electron flow, the fitter said plant [or said plant material].

36. (Once Amended) The method of Claim 24, wherein said plant [or plant material] is a transgenic plant [or transgenic plant material].